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ABSTRACT

Treatment attrition is a major problem for programs treating adolescent substance abusers. To isolate and cross validate factors which are predictive of addiction treatment attrition among adolescent substance abusers, screening interview and diagnostic variables from 119 adolescent in-patients were submitted to a discriminant equation analysis. The results showed that the equation was able to successfully predict program completion/non-completion for 82 percent of the derivation sample. The variables which distinguished the two groups were a diagnosis of affective disorder, two or more previous psychiatric treatments, a history of family pathology, and minimal (or no) family involvement in the patient's treatment. Use of this formula on a second cross-validation sample (N=45) yielded a hit rate of 76 percent. These findings support the use of the discriminant equation analysis model, and suggest that treatment dropouts can be identified even among high risk groups such as adolescents in substance abuse treatment. (BL)

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Attrition from an Adolescent Addiction Treatment Program: A Cross Validation

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Abstract

This study isolates and cross validates factors which are predictive of addiction treatment attrition among adolescent substance abusers. A discriminant equation, developed on an initial sample of 74 patients, successfully predicted program completion/non-completion (R^2=.40, $F_{(4,69)}$=11.47, $p<.001$). This equation, which included 4 predictor variables, correctly classified 82% of the derivation sample. Use of this formula on a second sample (N=45) yielded a hit rate of 76%. Implications of these findings for adolescent substance abuse treatment are discussed.

Treatment attrition is a major problem for programs treating adolescent substance abusers. Adolescents frequently seek treatment (or are forced into treatment against their will) and then fail to complete the treatment regimin. Within an inpatient facility, treatment attrition can take many forms: signing out against medical advice (AMA), leaving without staff knowledge (AWOL), being administratively discharged due to extreme unmanagability or drug or alcohol use, or transfer to more psychiatrically oriented units. Not only are these youths disruptive to the hospital treatment environment but, more importantly, they subsequently show poor follow-up adjustment. Hence, much time, energy, and money is spent with little payoff to the patient or society. The early identification of these disruptive patients is essential to the planning of effective response interventions.

The subject of treatment drop-outs has received a great deal of attention (see Baekelund & Lundwall, 1975, for an excellent review of this literature). Generally, they are consistently characterized as young, single, alcoholic, and drug dependent (Beck, Shekim, Gilbert, & Fraps, 1983; Altman, Brown, & Sletten, 1972); findings which are not particularly helpful (or encouraging) to adolescent addiction treatment personnel. Although a number of investigators have

systematically studied attrition among adult substance abusers (Roffe, 1981), few have focused on an adolescent population. Despite the widespread awareness that adolescent substance abusers are at high risk for dropping out of treatment, resulting in a relatively poor prognosis for improvement, little is known about factors which contribute to this risk. This study isolates, and cross validates, factors which are predictive of attrition from an inpatient drug and alcohol program for adolescents.

Methods

All adolescent admissions during 1980-1982 to a short-term, inpatient addiction recovery program of the Carrier Foundation, a private psychiatric hospital, were included in this study (N=119). The mean age was 17.[illegible] years (s.d.=1.9, 63% male). All patients had a DSM-III (American Psychiatric Association, 1980) diagnosis of Alcohol and/or Drug Abuse/Dependence. The predominant pattern of chemical misuse was alcohol and polydrug abuse with an average abuse duration of 3.49 years (s.d.=2.2). Some patients also had concurrent Axis 1 psychiatric diagnoses (primarily affective disorders). A total of 76 adolescents (64%) completed the treatment program while 43 were classified as treatment drop-outs (36%).

All adolescents had participated in a structured screening interview administered by the same trained social worker and an admission diagnostic workup by a psychiatrist. Eighteen variables which were expected to have some relationship with

program attrition were excerpted from the patient records of these interviews with a high degree of reliability.

Results

As expected, successful completers of the inpatient program spent significantly more time in the program than the early termination group (30.2 days versus 17.7 days, $t=6.45$, $p<.0005$). In fact the attrition group received just slightly more than half the treatment as compared to those who completed the program. There were no significant differences in the mean age (17.4 for completers vs. 17.6, $t=.65$, n.s.) or in drug/alcohol use duration (3.3 yrs. for completers vs. 3.9 yrs., $t=1.59$, n.s.).

Table 1

Appropriate preliminary analyses (chi squares and t-tests) were used to identify those variables which significantly differentiated program completers from non-completers among the 1980-1981 admissions. These preliminary analyses indicate 7 variables which significantly differentiated the program dropout and completer. Treatment dropouts tend to have more history of psychiatric treatment, a concurrent DSM-III affective disorder diagnosis, and poor peer group relationships. There is also more history of family pathology and little family involvement in the treatment of the dropout. Furthermore, the dropout tends to abuse more than just alcohol

and is less willing to admit to a dependency problem. The two groups did not differ significantly on age, sex, nature of referral, living situation, history of learning disability, academic performance, number of previous addiction treatments, duration of substance abuse, or previous involvement with the law.

Table 2

From the 7 variables which discriminated between the groups, a discriminant function equation was calculated through a stepwise regression analysis. Results of this discriminant function analysis on the derivation sample of adolescents (1980-1981) yielded the combination of 4 variables presented in Table 2. The variables were a diagnosis of affective disorder, 2 or more previous psychiatric treatments, a history of family pathology, and minimal (or no) family involvement in the patients treatment. The disciminant function equation consisting of these four variables significantly predicted the adolescent treatment dropout yielding a total R^2 of .40 ($F_{(4,49)}=11.47$, $p<.001$) and correct classification of 82% of the derivation sample (sensitivity=83%, specificity=82%, predictability=71%).

Table 3

In order to cross-validate these results, the same discriminant function equation was applied to the second sample

of patients (1982 admissions). Using the same cut-off, the equation correctly classified 76% of the adolescents (sensitivity=75%, specificity=76%, predictability=71%). (Indices of predictability are presented in Table 3). As expected, some shrinkage in predictive power occurred when moving from the derivation to the cross validation sample. This shrinkage was small, however (only 6%), so it appears the equation maintained its ability to discriminate between groups. Hence, the combination of 4 variables--a concurrent diagnosis of affective disorder, 2 or more previous psychiatric treatments, a history of family pathology, and little or no family involvement in treatment--appears to be a relatively stable predictor of treatment attrition among adolescent substance abusers.

Discussion

This study demonstrates that treatment drop-outs can be identified even among a high risk group such as adolescents in treatment for drug and/or alcohol problems. The fact that this identification was replicated in a second sample lends strength to the predictive power of the derived equation. Such information could be useful in helping to screen out poor prognosis patients, to identify them for special interventions which might target their tendency to drop-out of treatment, or to modify treatment programs to meet their complex needs.

The successful predictors fell into two broad categories: concurrent psychiatric disorders (especially depression) and

family dynamics. Both have implications for treatment and may provide a basis for improving adolescent substance abuse treatment.

It appears that adolescents with concomittant psychiatric impairment fail to remain in treatment programs geared primarily to drug and alcohol rehabilitation. Specifically, a relationship exists between depression and attrition; a relationship which has been demonstrated in adults (Baekeland, Lundwall, & Shanahan, 1973). An immediate and practical question surfaces over the appropriate treatment for the adolescent suffering from both substance abuse and other psychopathology. Our data suggests that these patients do not respond well to traditional treatment for their alcohol or drug problem. Further research will be needed to clarify the most successful treatment approach for such difficult patients. It might also be important to discriminate those that are substance abusers with psychiatric problems verses those who are primarily psychiatric patients with secondary substance abuse. Discrimination of these patients has proven helpful with adults (Shuckit, 1983) and might provide a valuable tool to treating these challanging adolescent patients.

The significant "family" variables points to the importance of the family in the treatment of adolescent substance abusers and illustrate the disastrous results of treating an adolescent with no family involvement. Our results indicate an increased risk of treatment drop-out when the

family is not involved in treatment. Treatment programs should make every possible attempt to include the patients family in treatment.

This study has isolated four variables which significantly identified treatment drop-outs from an inpatient adolescent substance abuse program. The discriminant function equation was successful both on the derivation and cross-validation samples. This is suggestive of a relatively stable relationship between concurrent psychopathology, family pathology and involvement in treatment, and the tendency for substance abusing adolescents to drop out of treatment. Future research should address alternative means of working with patients who are at high risk of program attrition.

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Table 1

VARIABLES DISCRIMINATING BETWEEN ADOLESCENT TREATMENT DROPOUTS vs. COMPLETERS (N = 74)
**Concurrent Affective Disorder Diagnosis
**Number of Previous Psychiatric Treatments
*History of Family Pathology
**Family Involvement with Treatment
**Social Worker Rating of Peer Group Relationship
**Acceptance of Dependency Problem
*Abuses Alcohol Only

*$p < .10$; **$p < .01$

Table 2

DISCRIMINANT ANALYSIS PREDICTING ATTRITION AMONG ADOLESCENT SUBSTANCE ABUSERS (N = 74)				
VARIABLE	Cum R^2	F	df	p <
Affective Disorder Diagnosis	.19	16.9	1,72	.001
> 2 Previous Psychiatric Tx	.31	12.3	1,71	.001
History of Family Pathology	.36	5.8	1,70	.05
Lack of Family Involvement in Tx	.40	4.8	1,69	.05

Table 3

PREDICTION OF ADOLESCENT TREATMENT ATTRITION		
	Sample N = 74	Cross Validation N = 45
Hit Rate	82%	76%
Sensitivity	83%	75%
Specificity	82%	76%
Predictability	69%	71%

Table 3

OVERALL KAPPAS		
	N	Kappa
DSM-III Field Trials	131	.66
Clinician/ Clinician	103	.73
Clinician/ Computer	103	.67